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3/28/02

Attorney Docket No. YO998-522

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

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Signature: Date:March 7, 2002

Applicant(s): L.D. Comerford et al.
Docket No.: YO998-522
Serial No.: 09/460,913
Filing Date: December 14, 1999
Group: 2641
Examiner: Abul K. Azad

Title: Methods and Apparatus for Contingent Transfer and Execution of Spoken Language Interfaces

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TRANSMITTAL OF FORMAL DRAWINGS

Assistant Commissioner for Patents
Washington, D.C. 20231

Attention: Official Draftsperson

Sir:

Applicants submit herewith fifteen (15) sheets of formal drawings in the above-referenced patent application.

Respectfully submitted,

Wayne L. Ellenbogen

Date: March 7, 2002

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FIG. 1

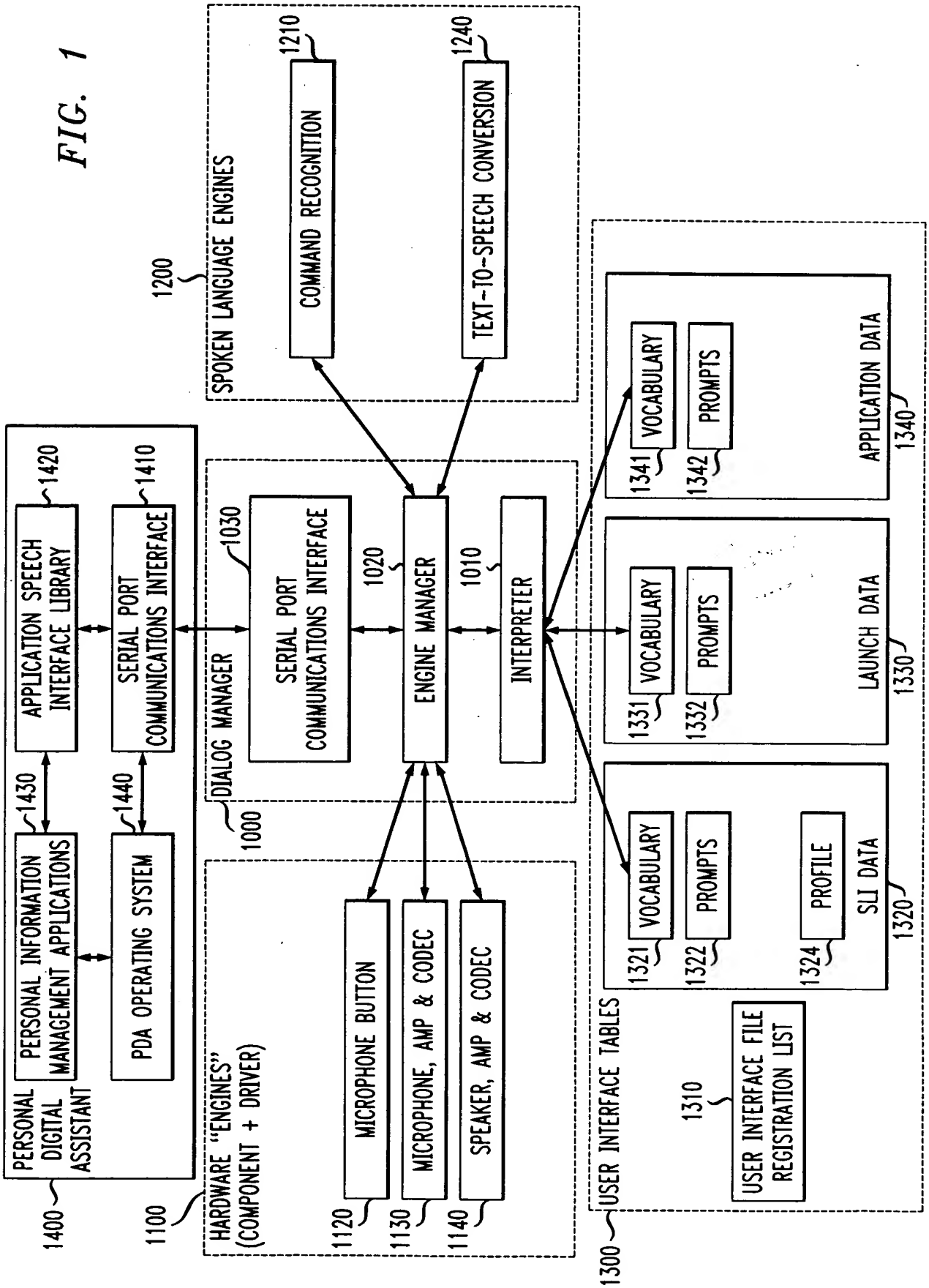
1200
SPOKEN LANGUAGE ENGINES
1210
COMMAND RECOGNITION
1240
TEXT-TO-SPEECH CONVERSION
1000
DIALOG MANAGER
1030
SERIAL PORT COMMUNICATIONS INTERFACE
1020
ENGINE MANAGER
1010
INTERPRETER
1400
PERSONAL DIGITAL ASSISTANT
1420
APPLICATION SPEECH INTERFACE LIBRARY
1410
SERIAL PORT COMMUNICATIONS INTERFACE
1430
PERSONAL INFORMATION MANAGEMENT APPLICATIONS
1440
PDA OPERATING SYSTEM
1100
HARDWARE "ENGINES" (COMPONENT + DRIVER)
1120
MICROPHONE BUTTON
1130
MICROPHONE, AMP & CODEC
1140
SPEAKER, AMP & CODEC
1300
USER INTERFACE TABLES
1310
USER INTERFACE FILE REGISTRATION LIST
1320
SLI DATA
1321
VOCABULARY
1322
PROMPTS
1324
PROFILE
1330
LAUNCH DATA
1331
VOCABULARY
1332
PROMPTS
1340
APPLICATION DATA
1341
VOCABULARY
1342
PROMPTS

FIG. 2

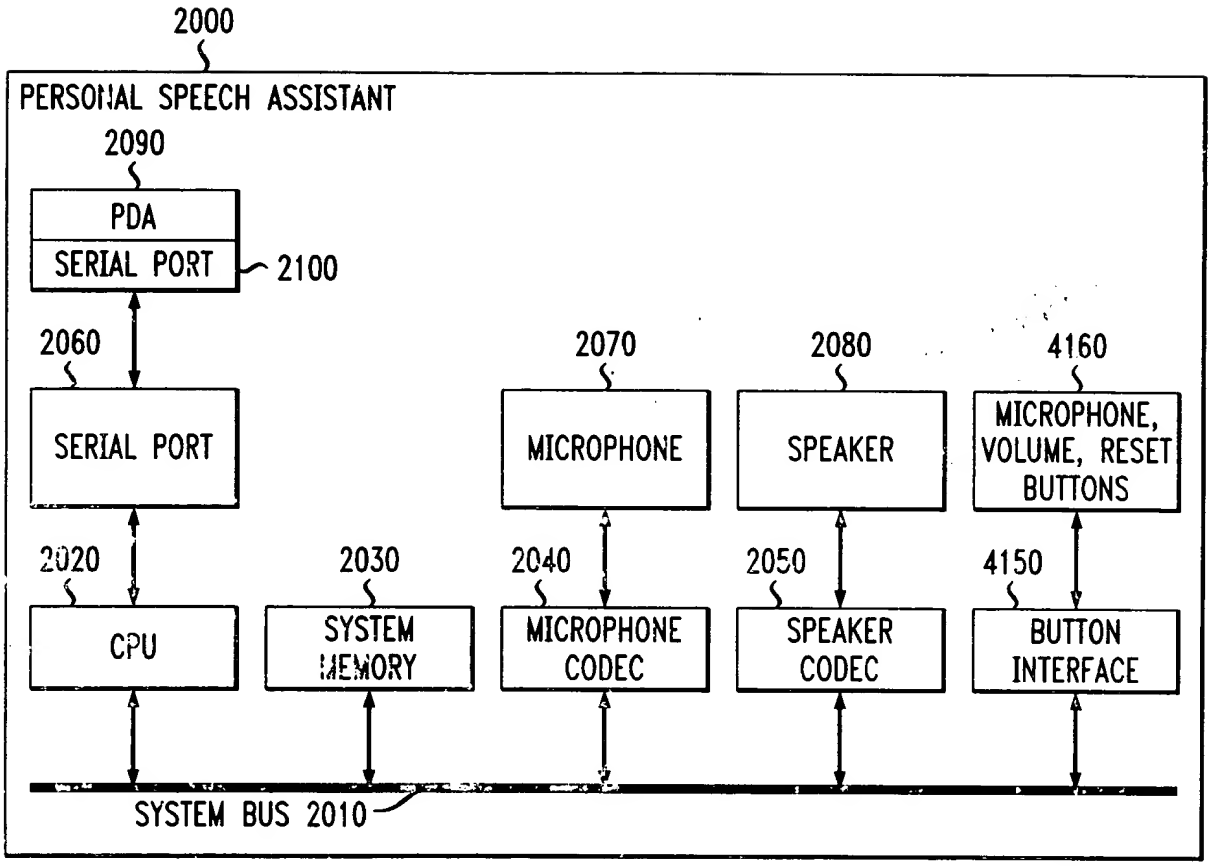
2000
PERSONAL SPEECH ASSISTANT
2090
PDA
SERIAL PORT
2100
2060
SERIAL PORT
2020
CPU
2030
SYSTEM MEMORY
2070
MICROPHONE
2040
MICROPHONE CODEC
2080
SPEAKER
2050
SPEAKER CODEC
4160
MICROPHONE, VOLUME, RESET BUTTONS
4150
BUTTON INTERFACE
SYSTEM BUS 2010

FIG. 3

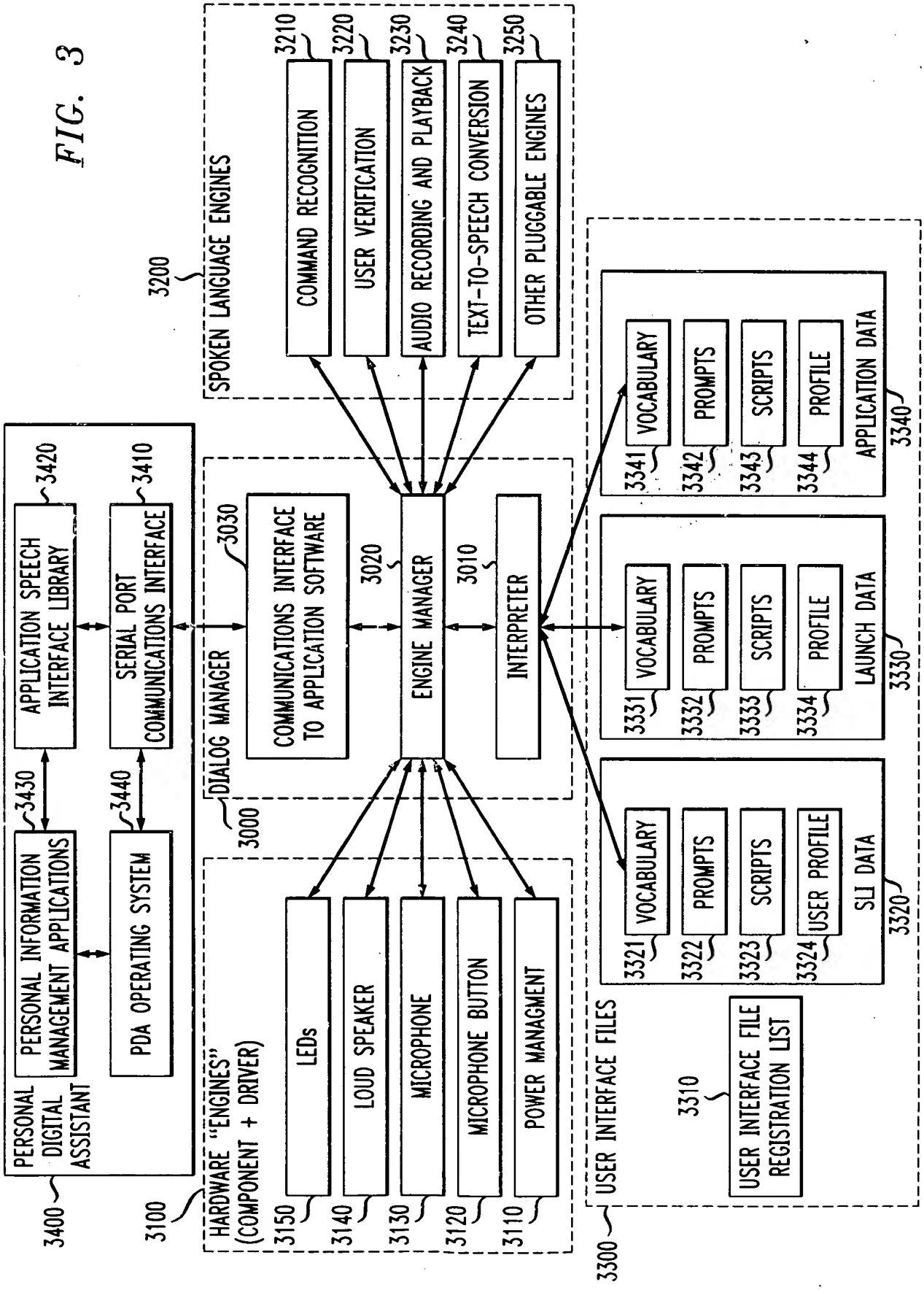
3400
PERSONAL DIGITAL ASSISTANT
PERSONAL INFORMATION MANAGEMENT APPLICATIONS
PDA OPERATING SYSTEM
3430
3440
APPLICATION SPEECH INTERFACE LIBRARY
SERIAL PORT COMMUNICATIONS INTERFACE
3420
3410
3100
HARDWARE "ENGINES" (COMPONENT + DRIVER)
3150 LEDs
3140 LOUD SPEAKER
3130 MICROPHONE
3120 MICROPHONE BUTTON
3110 POWER MANAGMENT
3000
DIALOG MANAGER
COMMUNICATIONS INTERFACE TO APPLICATION SOFTWARE
3030
3020
ENGINE MANAGER
3010
INTERPRETER
3200
SPOKEN LANGUAGE ENGINES
3210 COMMAND RECOGNITION
3220 USER VERIFICATION
3230 AUDIO RECORDING AND PLAYBACK
3240 TEXT-TO-SPEECH CONVERSION
3250 OTHER PLUGGABLE ENGINES
3300
USER INTERFACE FILES
3310
USER INTERFACE FILE REGISTRATION LIST
3320
SLI DATA
3321 VOCABULARY
3322 PROMPTS
3323 SCRIPTS
3324 USER PROFILE
3330
LAUNCH DATA
3331 VOCABULARY
3332 PROMPTS
3333 SCRIPTS
3334 PROFILE
3340
APPLICATION DATA
3341 VOCABULARY
3342 PROMPTS
3343 SCRIPTS
3344 PROFILE

FIG. 4

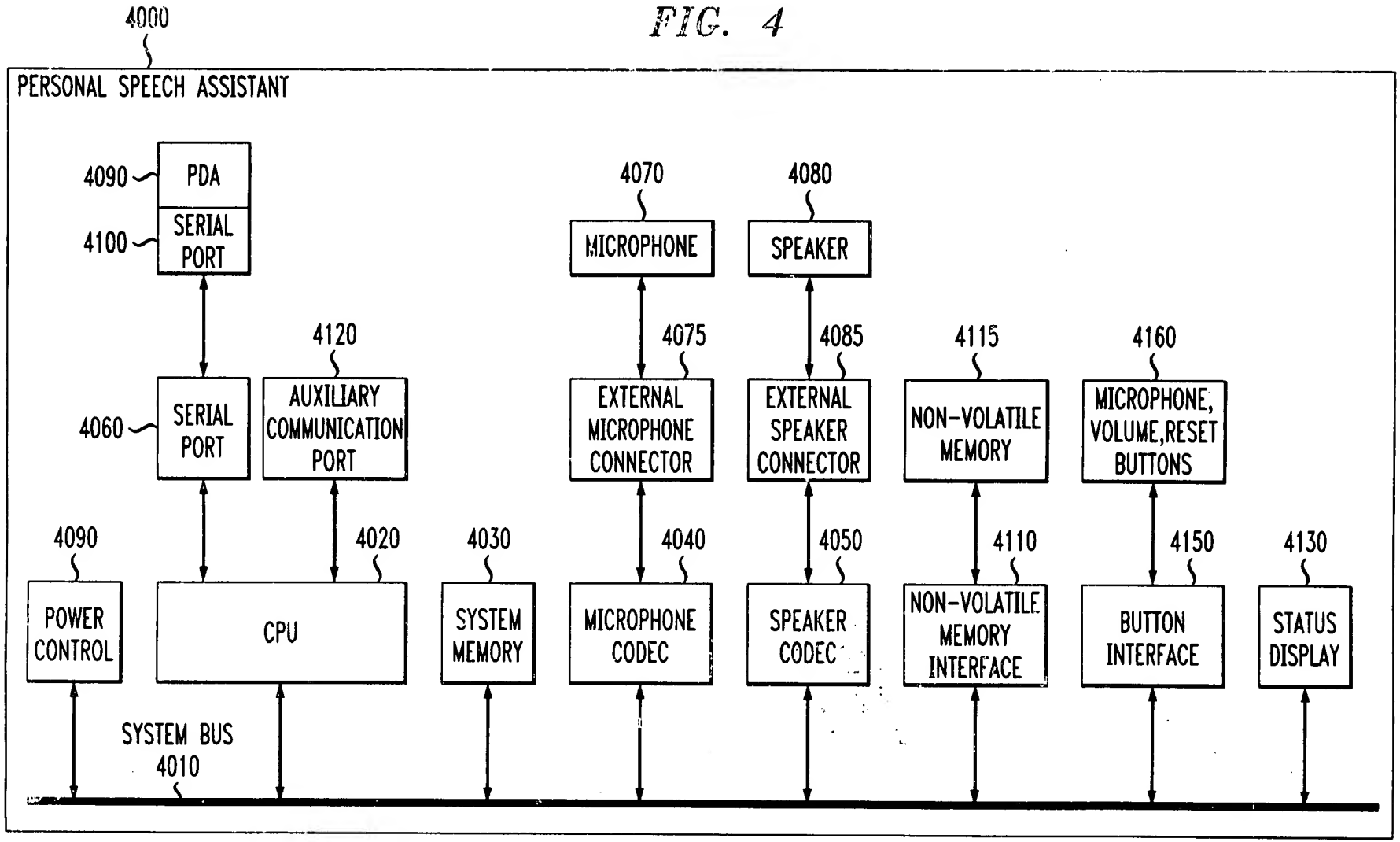
4000
PERSONAL SPEECH ASSISTANT
4090
PDA
4100
SERIAL PORT
4060
SERIAL PORT
4120
AUXILIARY COMMUNICATION PORT
4070
MICROPHONE
4075
EXTERNAL MICROPHONE CONNECTOR
4080
SPEAKER
4085
EXTERNAL SPEAKER CONNECTOR
4115
NON-VOLATILE MEMORY
4160
MICROPHONE, VOLUME, RESET BUTTONS
4090
POWER CONTROL
CPU
4020
4030
SYSTEM MEMORY
4040
MICROPHONE CODEC
4050
SPEAKER CODEC
4110
NON-VOLATILE MEMORY INTERFACE
4150
BUTTON INTERFACE
4130
STATUS DISPLAY
SYSTEM BUS
4010

FIG. 5

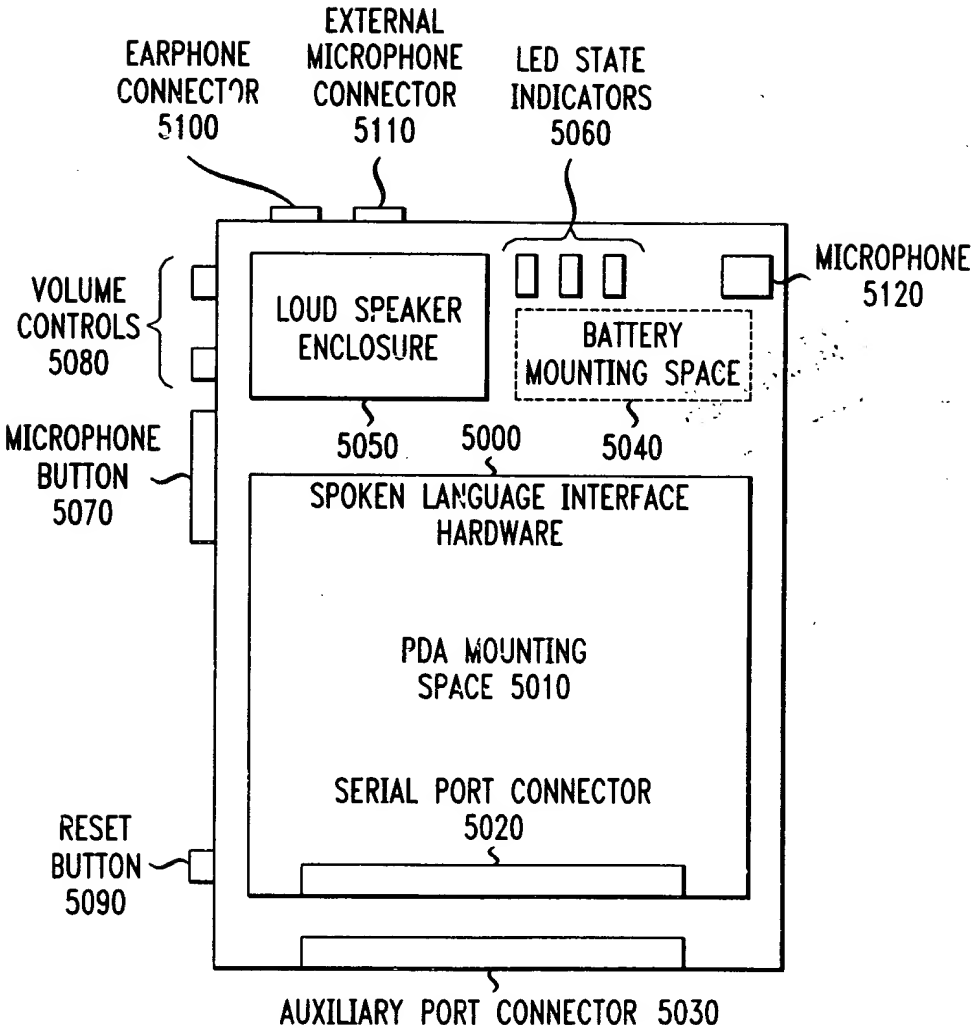
EARPHONE CONNECTOR 5100
EXTERNAL MICROPHONE CONNECTOR 5110
LED STATE INDICATORS 5060
MICROPHONE 5120
VOLUME CONTROLS 5080
LOUD SPEAKER ENCLOSURE
BATTERY MOUNTING SPACE
MICROPHONE BUTTON 5070
5050
5000
5040
SPOKEN LANGUAGE INTERFACE HARDWARE
PDA MOUNTING SPACE 5010
SERIAL PORT CONNECTOR 5020
RESET BUTTON 5090
AUXILIARY PORT CONNECTOR 5030

FIG. 6

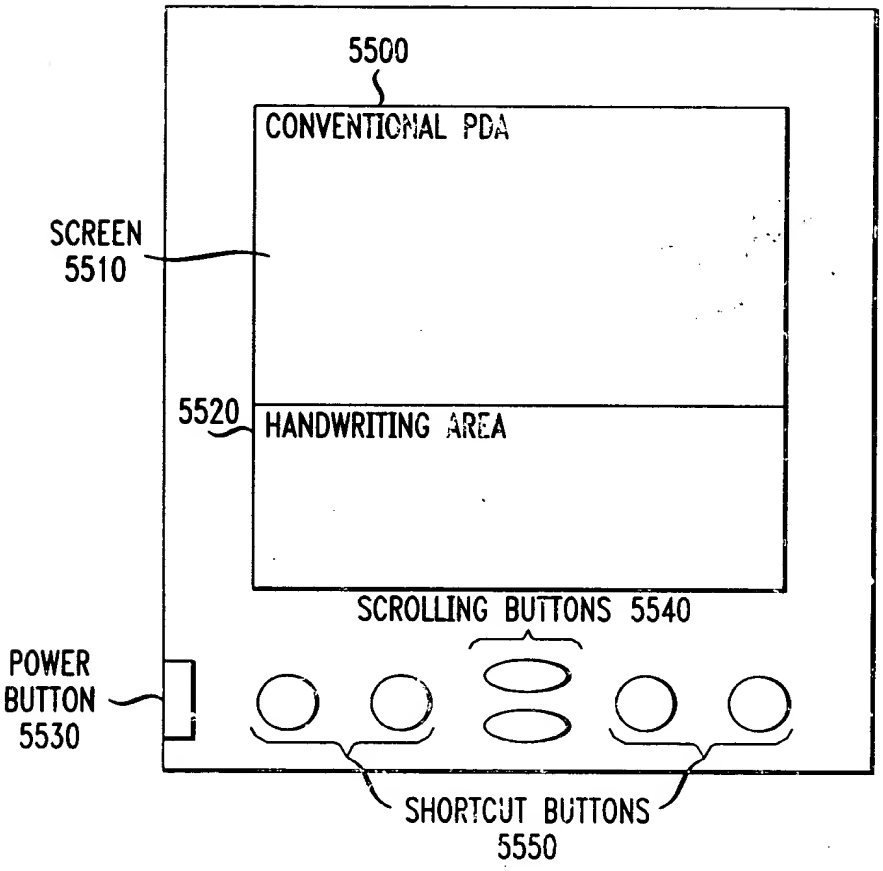
5500
CONVENTIONAL PDA
SCREEN
5510
5520
HANDWRITING AREA
SCROLLING BUTTONS 5540
POWER
BUTTON
5530
SHORTCUT BUTTONS
5550

FIG. 7

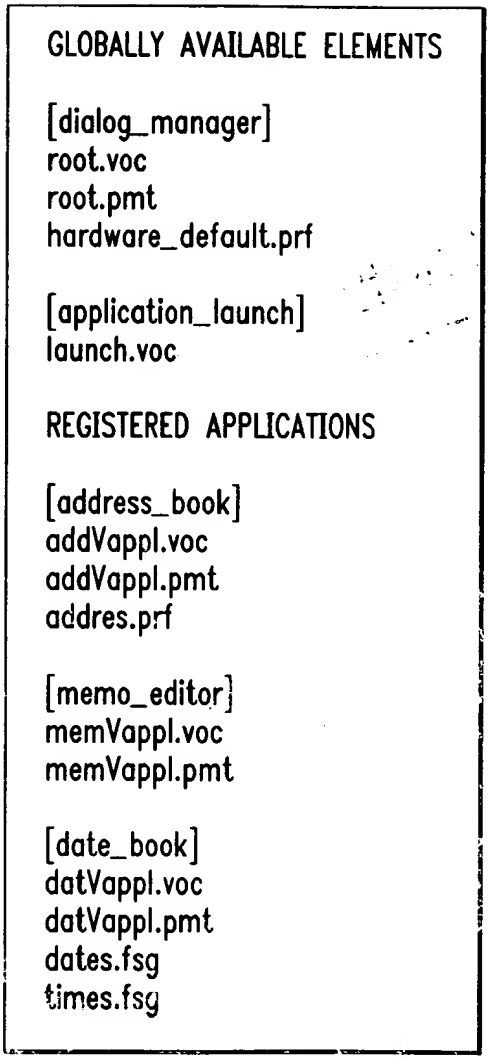
GLOBALLY AVAILABLE ELEMENTS
[dialog_manager]
root.voc
root.pmt
hardware_default.prf
[application_launch]
launch.voc
REGISTERED APPLICATIONS
[address_book]
addVappl.voc
addVappl.pmt
addres.prf
[memo_editor]
memVappl.voc
memVappl.pmt
[date_book]
datVappl.voc
datVappl.pmt
dates.fsg
times.fsg

FIG. 8

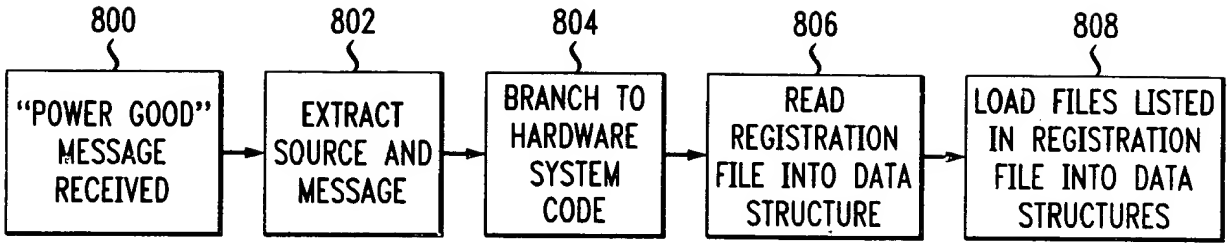

FIG. 9

mic_type	1
enable_shutdown	0
power_time_out	120000
shut_down_beep	1
echo_commands	0
prompt_on_not_recognized	1
prompt_on_low_spoken_volume	1
start_up_gender	0
start_up_volume	85
start_up_speed	75
start_up_roughness	10
start_up_breathiness	10
start_up_headsize	40
start_up_pitchfluctuation	50
start_up_pitchbaseline	65
start_up_quality	100

FIG. 10

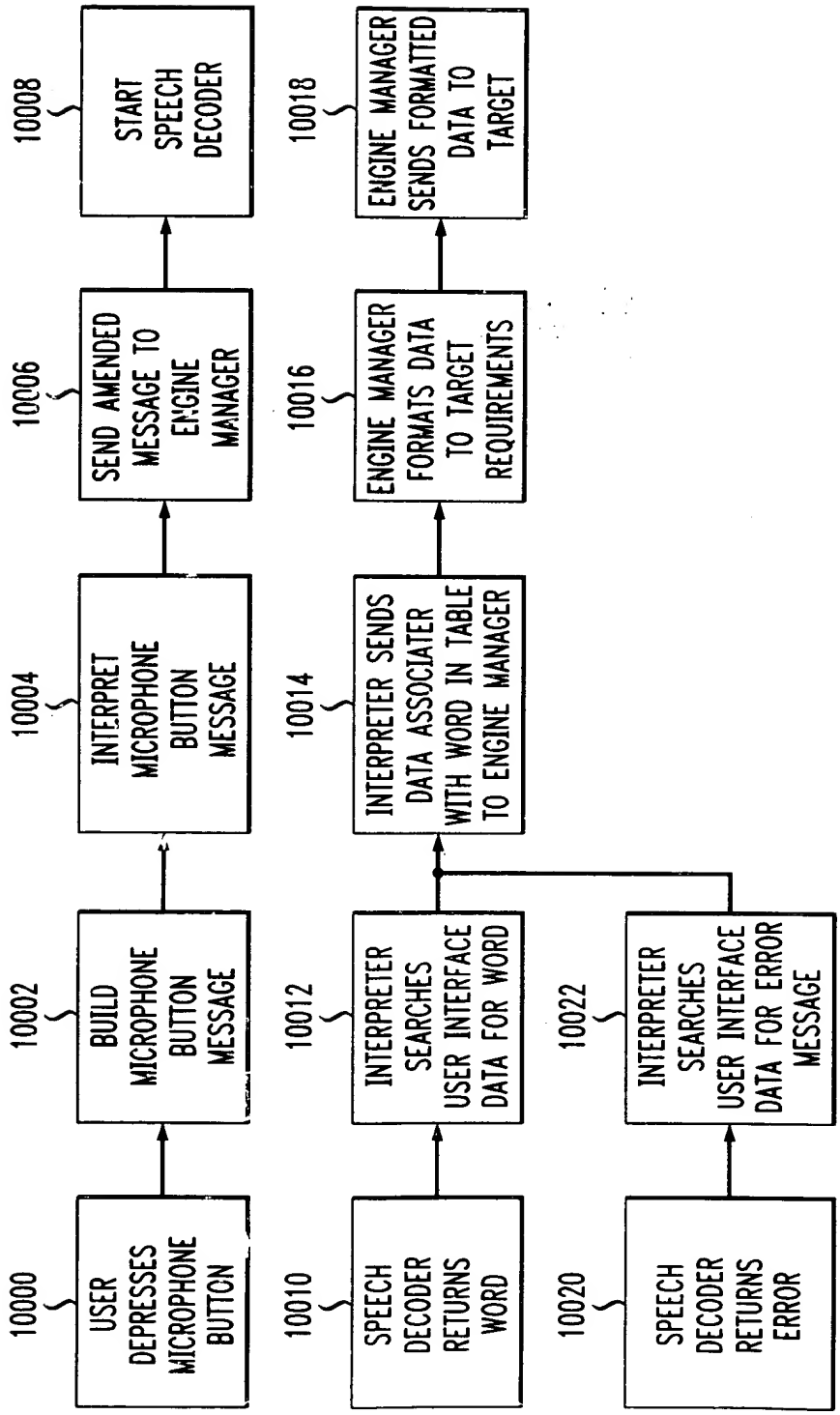
10000
USER DEPRESSES MICROPHONE BUTTON
10002
BUILD MICROPHONE BUTTON MESSAGE
10004
INTERPRET MICROPHONE BUTTON MESSAGE
10006
SEND AMENDED MESSAGE TO ENGINE MANAGER
10008
START SPEECH DECODER
10010
SPEECH DECODER RETURNS WORD
10012
INTERPRETER SEARCHES USER INTERFACE DATA FOR WORD
10014
INTERPRETER SENDS DATA ASSOCIATER WITH WORD IN TABLE TO ENGINE MANAGER
10016
ENGINE MANAGER FORMATS DATA TO TARGET REQUIREMENTS
10018
ENGINE MANAGER SENDS FORMATTED DATA TO TARGET
10020
SPEECH DECODER RETURNS ERROR
10022
INTERPRETER SEARCHES USER INTERFACE DATA FOR ERROR MESSAGE

FIG. 11A

new	nw	null
scroll_up	su	10
scroll_down	sd	10
top	to	null
bottom	bo	null
next	nx	null
previous	pr	null
edit_entry	ed	null
done	ok	null
repeat	rp	1
list_all_entries	al	null
list_all_names	an	null
address_please	ad	null
address	ad	null
what_is_the_address	ad	null
continue	co	null
stop_reading	nop	x
find_homer_simpson	fi	simpson
find_Ed_Smith	fi	smith
find_David_Frank	fi	frank

FIG. 11B

```
typedef struct
{
    char*   command_target;
    char*   spoken_command[CMDMAX];
    char*   command_string[CMDMAX];
    char*   data_string[CMDMAX];
    short   array_length;
} COMMAND_VOCAB;
```

FIG. 12A

empty	the_list_is_empty
nomore	there_are_no_more_items
attop	you_are_at_the_top_of_the_list
emptyaddress	there_is_no_address_for_this_entry
noneselected	no_entry_selected
many	there_are_%1_people_named_%2_on_the_list

FIG. 12B

```
typedef struct
{
    char* index_string[PROMPTMAX];
    char* prompt[PROMPTMAX];
    short array_length;
} PROMPT_LIST;
```

FIG. 13

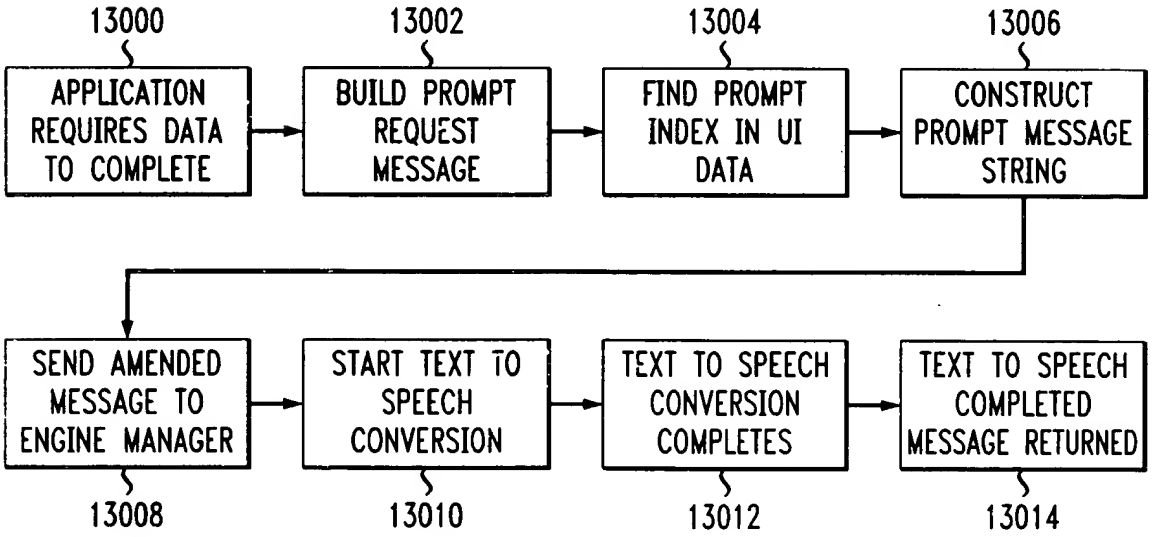

FIG. 14A

```
SCRIPT UI FILES ARE INDEX LISTS OF SCRIPTS

verify_user       python    {verify}
begin_dictation   python    {dictation}
dial_phone        python    {phone}
greetings         simple    {greet}
problems          inline    say_"Houston,_we_have_a_problem!",Shutdown;
```

FIG. 14B

```
BOOL Verify_user()
{
  engine_manager.mic_button_means(user_verification_engine);
  text_to_speech.say("Please verify your identity by pressing the
                      microphone button and speaking your name.");
  ok = verification_engine.verify_user();
  engine_manager.mic_button_means(command_recognition_engine);
  return(ok);
}
```

FIG. 15

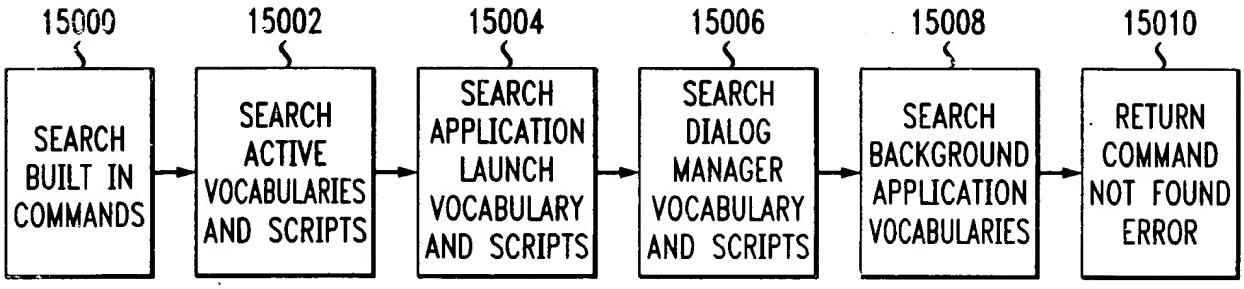

FIG. 16

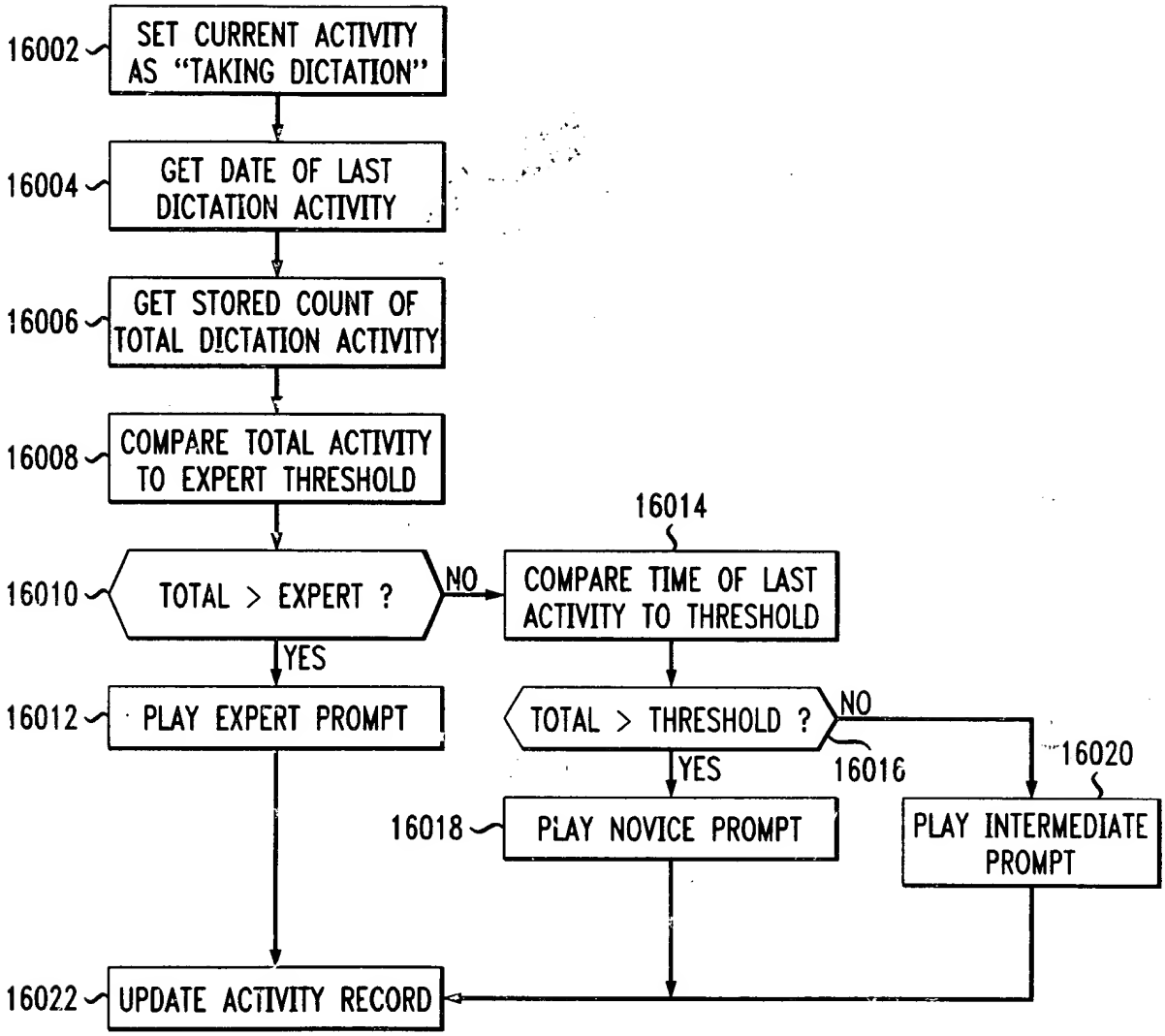
16002
SET CURRENT ACTIVITY AS "TAKING DICTATION"
16004
GET DATE OF LAST DICTATION ACTIVITY
16006
GET STORED COUNT OF TOTAL DICTATION ACTIVITY
16008
COMPARE TOTAL ACTIVITY TO EXPERT THRESHOLD
16010
TOTAL > EXPERT ?
NO
YES
16012
PLAY EXPERT PROMPT
16014
COMPARE TIME OF LAST ACTIVITY TO THRESHOLD
TOTAL > THRESHOLD ?
NO
YES
16016
16018
PLAY NOVICE PROMPT
16020
PLAY INTERMEDIATE PROMPT
16022
UPDATE ACTIVITY RECORD

FIG. 17

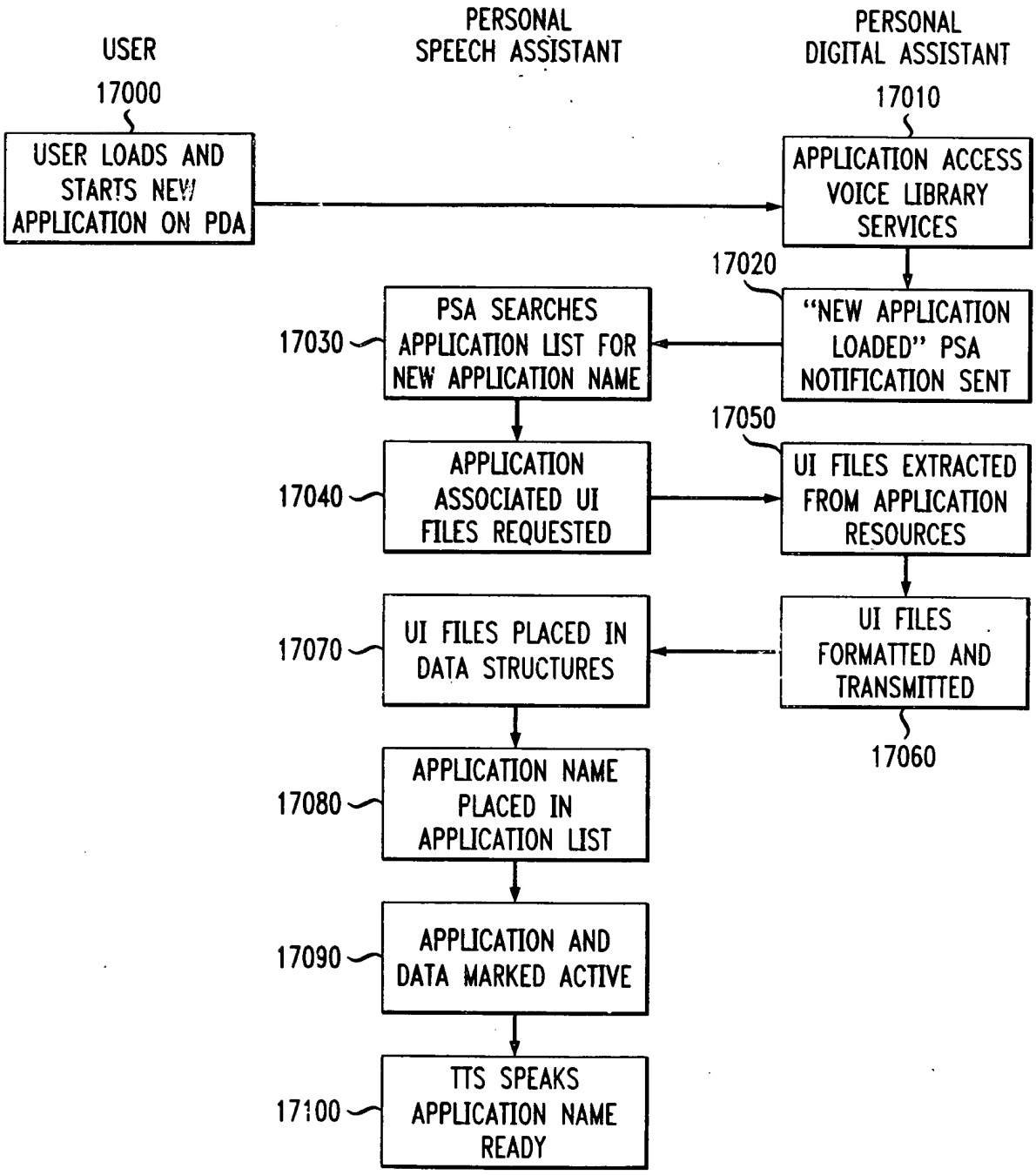
USER
PERSONAL SPEECH ASSISTANT
PERSONAL DIGITAL ASSISTANT
17000
USER LOADS AND STARTS NEW APPLICATION ON PDA
17010
APPLICATION ACCESS VOICE LIBRARY SERVICES
17020
"NEW APPLICATION LOADED" PSA NOTIFICATION SENT
17030
PSA SEARCHES APPLICATION LIST FOR NEW APPLICATION NAME
17040
APPLICATION ASSOCIATED UI FILES REQUESTED
17050
UI FILES EXTRACTED FROM APPLICATION RESOURCES
17060
UI FILES FORMATTED AND TRANSMITTED
17070
UI FILES PLACED IN DATA STRUCTURES
17080
APPLICATION NAME PLACED IN APPLICATION LIST
17090
APPLICATION AND DATA MARKED ACTIVE
17100
TTS SPEAKS APPLICATION NAME READY

FIG. 18A

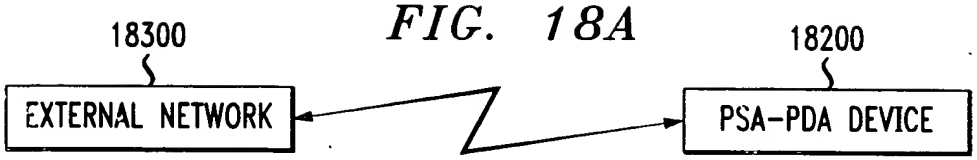
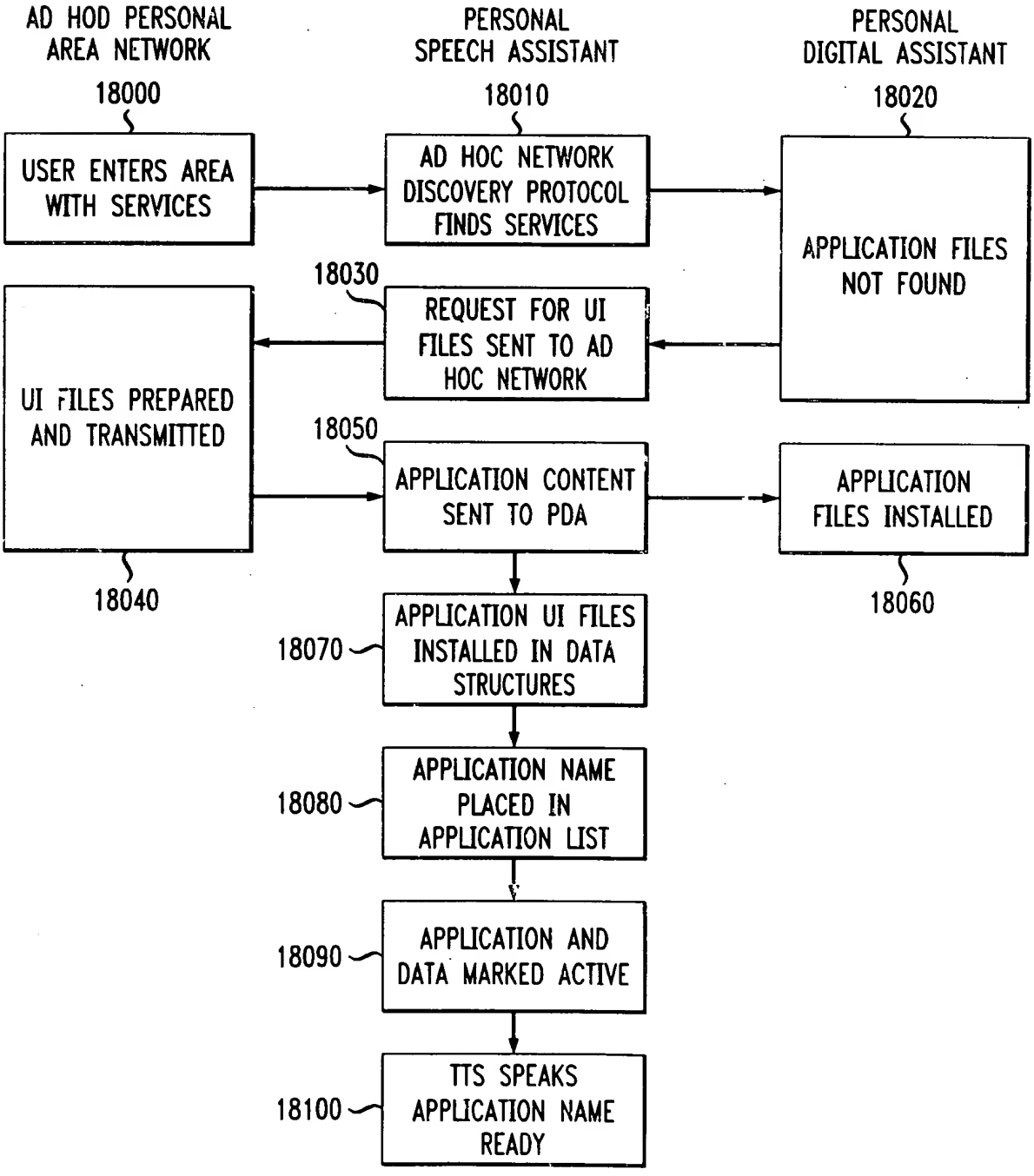
FIG. 18B